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CAVALRY EQUIPMENT
AND TACTICS
ON THE EUPHRATES FRONTIER

A. D. H. BIVAR

The following study is substantially the same as a paper delivered at the Symposium on "Byzantium and Sasanian Iran," held at Dumbarton Oaks from 30 April to 2 May 1970.

HISTORIANS with varying interests are inclined to differ on the point where they divide the civilization of Rome from that of Byzantium. The political historian may take Constantine's foundation of the New Rome in A.D. 330 as the logical break. The student of literature may see as decisive for the classical tradition the closing of the schools at Athens in A.D. 529. For our present theme of military history, the change that impresses the onlooker is that typically the Roman fought on foot, and the Byzantine on horseback. Perhaps it was at the battle of Adrianople in A.D. 378 that the Goths drove home the lesson that the infantry legions were no longer masters of the battlefield. Yet how often does history tell of a military innovation known for decades or centuries before the will was found to apply it decisively? Long before Adrianople the Roman army and the Goths had become well acquainted not only as enemies but also as allies. Both must have supplemented their notions of cavalry warfare with ideas derived from quite a different quarter. To see clearly how the supremacy of the horseman emerged, the story has to be taken back a century and further.

Of course the armored lancer, no less than the horse-archer of Carrhae, had slain his thousands long before the fourth century A.D. To survey his outfit rapidly, it seems that his body-defenses of scale armor, and in due course of the more flexible lamellar armor, had been in use in the Near East long before their mention by Herodotus,¹ and their roughly contemporary attestation for the Achaemenid period in the Chicago excavations at Persepolis.² Though the possibility is evident, we may not summarily ascribe to the Achaemenids the introduction of such equipment amongst the swarming horsemen of ancient Kazakhstan—tribesmen of the Massagetae and Sacaraucae—seeing that all these populations shared a common ancestry. To make watertight a case for cultural diffusion far more detailed evidence would be necessary. But in any event, such lamellar armor, probably from the first century B.C., was excavated by Professor Tolstov from burials at Uigharak on the Syr Darya.³ The evidence is clear that this was the equipment used by those Sacaraucae of the Jaxartes—to give the river its ancient name—who in 130 B.C. smashed through the Graeco-Bactrian kingdoms to establish their empire of Sakastan on the Helmand and in the Punjab. The unusual weaponry to which they owed this success was illustrated, as was to be expected, on the coins subsequently issued by their rulers in these regions; for example, on the tetradrachm of Spalirises (fig. 1 a and b). It would be instructive if a decision could be reached whether the military collapse of the Bactrians was the direct result of tactical superiority gained by their opponents through the use of armored cavalry; or whether the debacle was chiefly due to sheer weight of numbers and the desperation bred in the invaders by the

¹ VII.61; IX.22

² E. F. Schmidt, *Persepolis*, II (Chicago, 1957), 100, pl. 77.

³ A. Belenitsky, *Central Asia* (Geneva, 1969), 101.

knowledge that even more formidable hordes were pressing on their heels. As often in the history of war, it was not only arms, but also the men, that were needed to swing the balance.

In any event, when cousins of these last invaders, the Sarmatians (fig. 2), moved into the Ukraine during the same period, deploying the same equipment, they made at first no impressive military impact. Though they ventured to assail Roman Moesia during the year of the Four Emperors (A.D. 69), their blitzkrieg proved a fiasco, drawing from Tacitus only the scathing comment: *Mirum dictu ut sit omnis Sarmatarum virtus velut extra ipsos*.⁴ Nonetheless, the soldier-historian Arrian found it advisable to consecrate a treatise to methods of opposing their attacks.⁵ In the context of Sarmatian inroads into Moesia, it is of interest to illustrate a rock drawing from Preslav in Bulgaria, ascribed by N. Mavrodinov to the early Bulgars of the eighth century A.D. (fig. 3).⁶ An argument concerning the introduction of stirrups to be developed in the present paper (p. 287, *infra*) suggests that an earlier dating might be preferable, and the rock drawing could perhaps be connected with one of the Sarmatian movements into Moesia. If the context argues strongly for a lower horizon, a question to be resolved by the Byzantinist, the equipment shown can hardly be placed later than the Gothic wars of the third and fourth centuries A.D.

It is not suggested, of course, that this specific panoply was limited to any particular area. No technology is more quickly taken up by man from his neighbors, to put matters in the gentlest possible terms, than that of self-preservation. The same ponderous outfit unquestionably became standard within a few decades in the whole of Northern Asia, from the Yenesei⁷ to the Pacific. For this eastern limit the proof comes from a lively representation of armored horsemen in combat at Toung K'ou in distant Korea (fig. 4). The excavator's date of *ca.* A.D. 427 for this painted tomb, called Sanshitsu-Zuka,⁸ could perhaps be revised upward, since the differences from frescoes in an adjoining tomb (to be discussed *infra*, p. 286) are very noticeable. It is the first illustration in our discussion where both man and horse are armored, but horse-armor was already well attested amongst the Parthians.

On the Euphrates frontier, the Parthian empire had maintained forces of armored lancers anyway since the battle of Carrhae (53 B.C.), when Plutarch's reference to "helmets of Margian steel" implies that the corps was recruited in Central Asia.⁹ From the same account, it is reasonable to conclude that the ratio of horse-archers to lancers in that campaign was about ten to one. In later Parthian times, that is to say the first and second centuries A.D., the proportion

⁴ *Hist.*, I. 79.

⁵ Ἑκταξίς κατὰ Ἀλανῶν, in *Scripta minora* (Teubner, 1968), 177 ff.

⁶ N. Mavrodinov, "Le trésor protobulgare de Nagyszementmiklós," *Archaeologia Hungarica*, 29 (1943), 115.

⁷ B. Laufer, *Chinese Clay Figures*, I. *Prolegomena on the History of Defensive Armor* (Chicago, 1914), 222, fig. 35.

⁸ H. Ikéuchi, *Toung K'ou*, I, 25, and II, pl. LIII. 1. Cf. B. Szcześniak, "Japanese-Korean wars in A.D. 391-407 and their chronology," *Journal of the Royal Asiatic Society* (1946), pl. VII, facing p. 58.

⁹ Plutarch, *Crassus*, 24: ὥθησαν αὐτοὶ τε φλογεῖδεις κράνεσι καὶ θώραξι, τοῦ Μαργιανοῦ σιδήρου στίλβοντος ὁδὺ καὶ περιλαμπές, οἱ θ' ἵπποι καταπεφραγμένοι χαλκοῖς καὶ σιδηροῖς σκεπάσασιν. . . .

of the lancers, and the importance of their role in battle, seems to have been on the increase. At the Parthian and subsequent Roman frontier-station of Dura-Europos an actual specimen of horse-armor has been uncovered,¹⁰ and a well-known graffito of Parthian date from the same site not only shows the same feature, but also a further refinement in the evolution of armor (fig. 5).¹¹ Inset in the lamellar armor is an added protection for the rider's chest in the form of longitudinal metal splints. If the earliest plate reinforcement of flexible armor used in Iran was of this type, it may help to explain why the Persian word *jaw-shan*, of which the primary meaning is "breastplate," also happens to be the technical term in mediaeval usage for splinted armor worn on the arms or legs.¹²

A closely-dated representation of cavalry warfare is provided by the relief friezes of the Sasanian Ardashīr I in the Tang Āb gorge at Fīrūzābād in Fārs (fig. 6). Though doubts recently cast on the authenticity of the Syriac *Chronicle of Arbela* may require reexamination of the precise date of 28 April A.D. 224, which once commanded support, the decisive victory of Ardashīr over the Arsacid Ardavān V represented there is not likely to be later than A.D. 226.¹³ The Sasanid King is identified by his characteristic coiffure, similar to that of one of his six coin issues.¹⁴ His trappings, and those of the other two principal figures, are marked with family "devices" of a kind characteristic in this period. His own is a schematized diadem, similar to the horse-brand in the equestrian relief of Khosrau II at Tāq-i Bustān (fig. 28). That of the Arsacid, a ring mounted upon a base, is also known as a type on Parthian copper coins.¹⁵ The principal figures are massively armored and equipped, and it is clear that the lance is the main weapon of attack, already in the spirit of mediaeval chivalry. Body-armor is prominently shown, but a curious point is that the Arsacids wear the old-style lamellar armour, while the Sasanids are all attired in mail shirts—that is to say, specifically an armor of chain links (fig. 7).

Naturally the royal personages depicted at Fīrūzābād were lavishly equipped. Yet it is known that they took part personally in the battle, and their outfit should not have differed radically from that of all the front-line cavalry. Even at this date, the equipment fell little short of the list cited in a later passage by

¹⁰ M. I. Rostovtzeff, *The Excavations at Dura-Europos: Preliminary Report of the Second Season* (New Haven, 1931), 194–200.

¹¹ R. Ghirshman, *Iran. Parthians and Sassanians*, English trans. (London, 1962), 51, fig. 63 C.

¹² L. A. Mayer, *Mamlūk Costume* (Geneva, 1952), 37. For the Persian dictionary definitions of *jaw-shan*, see *Burhān-i qāṭi'*, s.v.

¹³ On the *Chronicle of Arbela*, see now J. Assfalg, "Zur Textüberlieferung der Chronik von Arbela," *Oriens Christianus*, 50 (1966), 19–36, and J.-M. Fiey, "Auteur et date de la Chronique d'Arbèles," *L'Orient Syrien*, 12 (1967), 265–302 (references which I owe to my former classmate Father Robert Murray). In the light of these discussions, the date proposed by the late Professor Henning, in S. H. Taqizadeh and W. B. Henning, "The dates of Mani's life," *Asia Major*, 6 (1957), 116, though obviously close to the truth, may need further examination.

¹⁴ V. G. Lukonin, "Monnaie d'Ardachir I et l'art officiel sassanide," *Iranica Antiqua*, 8 = *Mél. Ghirshman*, III (1968), 106–17, provides a stimulating discussion of the varied coinage of Ardashīr, with important new material. However, it is not quite clear why he places so late in the series the crown with the "tufted" *korymbos* here discussed, or asserts that on the Fīrūzābād combat relief Ardashīr wears not this crown but a military helmet.

¹⁵ W. Wroth, *British Museum Catalogue of Greek Coins. Parthia* (London, 1903), 236, nos. 96–99 (issues of Volagases III), pl. xxxv.3–6.

Ṭabarī as required at muster parades of Khosrau I (A.D. 531–79):¹⁶ mail, breast-plate, helmet, leg-guards, arm-guards, horse-armor, lance, buckler, sword, mace, battle-axe, quiver of thirty arrows (a number which was established in Arabic authors as canonical), bowcase with two bows, and two spare bowstrings. The list of items is tabulated in the Appendix (p. 291). It is true that mace and battle-axe are not visible in the reliefs, but there is evidence elsewhere of their use in the late Parthian and early Sasanian periods.¹⁷ However, like the Sarmatians of Tacitus, the cavalry of Ardashīr's day seem to have carried no shield.

On the present occasion there is space to investigate in detail only two of the items from this list, together with a third of which the interest lies in the fact that it is here conspicuously absent. These items are the armor of mail, the cavalry bow, and the stirrup. Each is an item which seems at a certain moment to have swayed the history of war, and to have found its place during later centuries in the tale of mediaeval chivalry. For the archaeologist, too, they have the added attraction of offering dating criteria for archaeological deposits or artistic representations.

Mail, the defense constructed of interlocked rings, is likely to be less ancient than the lamellar armor already discussed. Armor of mail is said to have been found in a Scythian grave of the fifth century B.C. at Zharovka near Kiev,¹⁸ where the context and circumstances need critical investigation. Otherwise, however, the earliest clear indications of its use are in the Roman world of the third century B.C. Polybius describes its employment as typical of the wealthier element amongst the military.¹⁹ No doubt such armor was a sophisticated industrial product, the manufacture requiring the technical skill of wire-drawing, together with much costly expenditure of labor for the fastening of the rivets; for it seems to have been necessary in mediaeval mail, and one may suppose also in good mail in antiquity, that the links should be fastened with rivets, as only by this means could penetration by thrusting weapons be prevented. The diameter of the rings, and fashion and number of the rivets, form the chief basis for the classification of mediaeval mail.²⁰ The specimens of ancient mail surviving, and accessible for study, are so few that they have not yet provided the basis of a typology. On Roman imperial monuments the wearing of mail becomes increasingly common from the second century A.D. As during the Middle Ages, schematized representation is not uncommonly found, which often makes the

¹⁶ Al-Ṭabarī, I, 964; Bal'ami, ed. Malik al-Shu'arā Bahār and Muḥammad Parvīn Gunabadi (Tehran, 1341), I, 1048.

¹⁷ For the battle-axe (*ṭabarzīn*), cf. W. B. Henning, "The Monuments and Inscriptions of Tang-i Sarvak," *Asia Major*, N.S., 2 (1952), 162. The mace represented on a gem of the third century A.D. (A. D. H. Bivar, "A Parthian amulet," *Bulletin of the School of Oriental and African Studies, University of London*, 30 [1967], 523, pl. 1.F) resembles the ritual "cow-headed" maces carried by Parsi priests, but all seem to derive from military prototypes, since the same form is found in mediaeval military maces.

¹⁸ H. Russell Robinson, *Oriental Armour* (London, 1967), 10. E. H. Minns, *Scythians and Greeks* (Cambridge, 1913), 74 note 6, mentions scale armor from "Zhurovka."

¹⁹ VI.23.15.

²⁰ The present writer collected material on the construction and riveting of later mediaeval mail, with reference to examples preserved in Nigeria, in his work *Nigerian Panoply*, Lagos, Dept. of Antiquities, Federal Republic of Nigeria (1964). Similar considerations apply in the case of ancient mail, but material for a general study is not yet within reach. A few examples are listed below.

true construction difficult to determine. There is, nonetheless, a possible occurrence on the column of Marcus Aurelius (fig. 8).²¹ Clearer instances are present on the great Trajanic frieze reused on the arch of Constantine,²² and the Adamklissi monument.²³ Yet, perhaps the most beautiful example in Roman sculpture is that of the Ludovisi battle sarcophagus (fig. 9) identified as that of Hostilian, son of the Emperor Trajan Decius, who was laid to rest in A.D. 251.²⁴ This date, if it may be regarded as firm, emerges as later than that of the renderings from Fīrūzābād, and even suggests that the Sasanians enjoyed a certain priority in the large-scale introduction of this type of armor at a certain stage. Close in time to the sarcophagus are the finds of mail from the siege-mines of Dura-Europos (A.D. 256);²⁵ also the fragments of a shirt at Saalburg (near Frankfurt) from excavations at the nearby fort of the Feldburg.²⁶ In the latter case, inspection of individual links is not possible since the mail is preserved in a solid mass of rust and soil. These sites of the German *limes* are thought to have been abandoned by Roman forces *ca.* A.D. 260. Finds of Roman mail links have been reported from the Scottish site of Newstead, where legionary armor (*lorica segmentata*), lamellar armor (*lorica squameata*), and chain armor (*lorica hamata*) are all represented, and at Lauriacum in Austria.²⁷

In the Roman army, it is a problem of some interest to determine by what personnel mail was worn, for what reason or purpose it may have been preferred, and on what basis it was supplied. Long-service soldiers of the regular legions are usually represented in the familiar armor of metal strips (*lorica segmentata*), which seems to have been a uniform requirement. Those who wear mail on the monuments appear chiefly to be standard-bearers, junior officers, and perhaps the auxiliaries. Its use does not seem to have been, as in Polybius' day, strictly a prerogative of wealth, but perhaps an option open to groups whose standards of dress were less strict than those of the regular legionaries. It is important, however, to consider possible operational advantages.

That mail did possess certain practical advantages over the lamellae of the *clibanarii* or Iranian lancers,²⁸ and at the same time over the traditional

²¹ P. G. Hamberg, *Studies in Roman Imperial Art* (Copenhagen, 1945), pl. 31.

²² *Ibid.*, pl. 12.

²³ *Enciclopedia dell' arte antica*, VII, 1023 (figs. 1154, 1155), *s.v.* "Tropaeum Traiani."

²⁴ Helga von Heintze, "Studien zu den Porträts des 3. Jahrhunderts n. Chr., 4. Der Feldherr des grossen ludovisischen Schlachtsarkophages," *Römische Mitteilungen*, 64 (1957), 91.

²⁵ M. I. Rostovtzeff, A. R. Bellinger, C. Hopkins, and C. B. Welles, *The Excavations at Dura-Europos: Preliminary Report of the Sixth Season* (New Haven, 1936), 192; 197: "very similar to those of the Middle Ages." The detailed discussion of this mail is awaited.

²⁶ *Saalburg Jahrbuch*, 7 (1930), 87 and fig. 37.

²⁷ For the Newstead finds, see J. Curle, *A Roman Frontier Post and its People* (Glasgow, 1911), 161 and pl. 38. For Lauriacum, M. von Groller, "Die Grabung im Lager Lauriacum," in *Der römische Limes in Oesterreich*, Heft 9 (1908), 102, fig. 45; *idem*, "Die Gräbungen im Lager Lauriacum und dessen nächsten Umgebung im Jahre 1908," *ibid.*, Heft 11 (1910), 42, fig. 15.

²⁸ That the Latin term *clibanarius*, Greek also κριβανάριος, was a loanword from Middle Persian was suggested by F. Rundgren, "Über einige iranische Lehnwörter im Lateinischen und Griechischen," *Orientalia Suecana*, 6 (1957), 49, a view supported by Professor R. N. Frye, *The Heritage of Persia* (Cleveland, 1963), 270. A derivation is proposed from a reconstructed MP *grīv-pān known from Armenian and a derivative surviving in Modern Persian. An apparent difficulty is that the strict meaning is "neck-guard" (E. Benveniste, *Titres et noms propres en Iranien ancien* [Paris, 1966], 63). Here the meaning should be a complete covering of armor, as Greek glosses such as κατάφρακτος, ὀλοσίδηρος seem

armor of the legions is not improbable. In the matter of protection, however, it is not obviously superior to the lamellae—indeed, quite the opposite. As against the legionary armor, the mail might have given better coverage for joints and gaps, but apparently no greater protection from a direct hit on the thorax. One advantage of mail seems rather to have been in the direction of mobility. It would have been lighter than any other defense of similar extent, have given greater freedom of movement, and above all would have been cooler, beyond all comparison, to wear. The last consideration should not be underrated. Mail survived in the East and in Africa for centuries after the advent of plate-armor in Europe. The protection against arrows and, later, crossbow-bolts, may certainly have been less perfect, but in high temperatures armor of an enclosed type was all but intolerable.

On the other hand, from the point of view of protection, one other advantage of mail must be remembered, and it may have been the decisive one for the case in point. It was the only defense which could be worn *in addition* to other armor. During the European Middle Ages, at least from the early fourteenth century, both mail and breastplate were needed to give the wearer reasonable security. On Roman imperial sculpture we cannot tell if personages depicted in mail were in fact wearing regulation strip-armor underneath. But a possible explanation of the mail seen on the monuments is that it was used by personnel likely to be in a particularly exposed position—standard-bearers, for example—as an additional layer on top of their usual armor. The representation of Ardashīr at Fīrūzābād shows beyond doubt that the elite cavalry of the Sasanians were already wearing both mail and a breastplate.

Whatever the exact whys and wherefores, this admittedly limited monumental evidence bears out two general conclusions for this period. First, by the end of the second century A.D., the ownership of mail, once limited by expense to a small minority, was becoming widespread both within, and also beyond the Roman Empire. The industrial reasons for the increased supply cannot yet be defined, but mail was soon the indispensable accessory of the Byzantine and mediaeval cavalry. The second conclusion is not strictly the result of the first, but seems to be connected with it. Between A.D. 200 and 350, the role of the horse-archer in the Iranian world and in warfare as a whole seems to have been in decline. It cannot of course be argued that the Sasanians, conquerors of the Parthian Empire, were unacquainted with horse-

to confirm. Benveniste observes that French *haubert* (English ‘hauberk’) shows a similar transition of meaning. Another hypothesis is that since *grīv*, ‘neck,’ as in other languages, bears the broader meaning ‘life,’ ‘self,’ **grīvpān* with a meaning such as ‘life-preserver’ might have been a suitable term for the outfit of lamellar armor in the Parthian and Sasanian armies. Rundgren, *op. cit.*, discusses also the intricate wordplays arising from the Greek meaning of κλίβανος as ‘oven,’ and possible assimilation of an Iranian term **tanvār*, ‘body-protection,’ to the Aramaic *tannūr*, ‘oven.’ In the absence of texts it is not easy to confirm that Iranian troopers actually called their armor either **grīvpān* or **tanvār*. Nonetheless, the comment of *Historiae Augustae Scriptores*, Alexander Severus, 56.6: *Persarum cataphractarios, quos illi clibanarios vocant*, seems to confirm that the strange word was thought to be Persian. Rundgren, indeed, believed that the whole word was borrowed directly from Persian **grīvbānvar* > **grīvbānar*, ‘neck-guard wearer’; one may note that the archetype **grīvpāndār*, ‘neck-guard possessor,’ follows a no less familiar pattern, and would result equally in the relevant form *grīvpānyār* in Sasanian dialect.

archery. At Firūzābād both Ardashīr and Shāpūhr carry quivers (fig. 10), and the personal interest of both in archery will shortly be discussed. Yet, the climax of battle is the impact of the cavalry charge. Here armored knights are not being picked off by archery at long range, or harassed by repeated volleys. For a while, as often in the history of warfare, armor had established its superiority over the missile. Not only technical, but also social causes may have contributed to this situation in Sasanian Iran. The backbone of the cavalry force were wealthy noblemen, able to pay for excellent armor and backed by an industrial community that could produce it. Like the voting citizen-soldiers of ancient Greece, they were men of consequence, whose safety and individual effectiveness in action was a matter that could command effort and expense. A system based on mercenary recruitment or on mass conscription would have been likely to use cheaper means. As usual, the classic question arises, whether the nature of society determined its choice of weapons, or whether the need for certain weapons conditioned the growth of that society. Whatever conclusion may be reached upon the theory, the fact is inescapable that a new weapon had been forged in the *clibanarius*, and within a few decades it was to form the backbone not only of Iranian armies, but also of those at Rome, as the classic description of Ammianus attests.²⁹

At first the Roman authorities, faced with these new panzers, seem to have looked for reinforcements to the Goths, who had been learning the techniques of cavalry from the Sarmatians in the Ukraine, and whose military gifts were no doubt evident. When, after Ardashīr's death, the Roman armies were marched by Gordian III down the Euphrates to Misiche, the consequence was a disaster. Yet the Gothic and German troops attracted sufficient attention to gain a mention in Shāpūhr's inscription.³⁰ Indeed, it is reasonable to hope that the progress of research in Iran will throw further light from Sasanian sources on events along the frontier in this dark century of Roman history. It is worth examining the rock reliefs of Naqsh-e Rostam, where four of the panels represent scenes of equestrian combat, for two of these are quite likely to refer to operations against the Romans.

The oldest of the reliefs in question is a double panel, with two registers superimposed (fig. 11). In the upper register, the winged crown designates the protagonist as the Sasanid King Bahrām II (A.D. 276–93), a personage of course represented in many Sasanian sculptures. The headgear of the opponent is not well preserved, but there are certain indications which support the view that it represents the plumed helmet of the Roman cavalry. The horsemen of the so-called "sarcophagus of Helena" at the Vatican present a partial analogy (fig. 12). Consequently, the historical context suggests that the war depicted is

²⁹ In his dramatic picture of the parade for the triumph of Constantius at Rome, XVI.10.8: *Spar-sique catafracti equites (quos clibanarios dictitant), personati, thoracum muniti tegminibus, et limbis ferreis cincti, ut Praxitelis manu polita crederes simulacra, non viros*. The reference to features masked in steel is interesting in the light of the visor seen in our fig. 19, and later masked helmets such as that from the Sutton Hoo ship-burial.

³⁰ Shāpūhr KZ, in A. Maricq, *Classica et Orientalia* (Paris 1965), 49, line 6f. Γορδιανὸς Καῖσαρ | ἀπὸ πάσης τῆς Ρωμαίων ἀρχῆς Γούθθων τε καὶ Γερμανῶν ἔθνων [δύναμιν συνέλεξεν]. . .

that of the Roman Emperor Carus against the Sasanians. Carus, as it may be recalled, met his death in mysterious circumstances in A.D. 283, during a brief Roman occupation of Ctesiphon. Roman sources ascribe his death (rather improbably, it may be surmised) to lightning rather than battle;³¹ but the Sasanian reliefs, as will be argued below in another connection, have often to be interpreted as symbolic rather than purely realistic representations of events. Thus, it is not necessary to conclude that the reliefs claim that the Roman died in single combat with Bahrām II. Indeed, the Sasanid may have been justified in claiming some credit for the downfall of the invader, whose death could have been due to assassination, or a coup-de-main. It is not always noticed that beneath the feet of Bahrām's charger may be seen the form and features of yet another defeated enemy (fig. 13). There is hope that his identity may some day be recognized, since a recent study has shown that the fallen enemies on the Sasanian reliefs are specific individuals;³² a similar approach could therefore be vindicated in the present instance.

It is natural to suppose that the event depicted in the lower register has some connection with that in the upper. The headgear of the protagonist (fig. 14) presents a difficulty. Though traces of wings are to be seen at the side, the front terminates in an animal's head, perhaps that of a serpent, so that the whole is better interpreted as the *Tierkopfskappe* of an unknown prince, rather than, once more, as an unfinished rendering of the King's crown. That of the opponent (fig. 15), though damaged, is quite compatible in form with that of Bahrām's rebellious brother in the Kushan governorship, the Hormizd Kūshānshāhshāh familiar on the Kushano-Sasanian coins (fig. 16). The historical reconstruction of Herzfeld, based on a suggestion of Marquart,³³ is surely valid: that the great achievement of Bahrām's reign was to defeat the simultaneous attacks of the Roman Emperor Carus, and of the rebellious Kūshānshāh.

It will be seen that the same hypothesis suggests a symbolical interpretation of the Sar-Mashhad rock relief in South Persia³⁴ as alluding to the same events. Here the king, identified by his crown as the same Bahrām II (fig. 17), has already slain one of the two murderous lions which are attacking him, and is on the point of running his sword through the second. If we regard the scene as depicting a royal show of courage in a real-life hunt, what king would under such circumstances need to hold the hand of his dynastically influential consort? Recent study has indeed identified her as Shāpūhrdukhtak, a grand-

³¹ *Historiae Augustae Scriptores*, Carus, 8: *ut alii dicunt morbo, ut plures fulmine interemptus est.*

³² B. C. MacDermot, "Roman Emperors in the Sassanian Reliefs," *Journal of Roman Studies*, 44 (1954), 78. Though there is discussion over the detailed identifications, e.g., by W. Hinz, *Altiranische Funde und Forschungen* (Berlin, 1969), 173 ff., the general principle that individuals are to be identified has found acceptance.

³³ E. Herzfeld, *Kushano-Sasanian Coins*, Memoirs of the Archaeological Survey of India, No. 38 (Calcutta, 1930), 34; J. Marquart, *Eranšahr*, in *Göttingen Abhandl. Phil.-Hist. Kl.*, N.F., 3,2 (Berlin, 1901), 36.

³⁴ This rock sculpture, discovered by E. Herzfeld ("Reisebericht," *Zeitschrift d. Deutschen Morgenländischen Gesellschaft*, 80 [1926], 256), appears to be the inspiration of the anecdote in Ṭabari, I, 860, of a Sasanian king, understandably taken for Bahrām V Gūr, who was required to win his crown in a combat with two lions.

daughter of Shāpūhr I himself.³⁵ On the other hand, as an allegorical representation of political events that had threatened the very kingdom, such a rendering is entirely apposite. One mortal enemy who had assailed the monarchy, the Roman Emperor Carus, had been struck dead, who knows but by the strategem of the Shah? A second, the rebellious Kūshānshāh Hormizd, was next to be faced and crushed. It is a not unhappy touch, on this interpretation, that the headgear of the presumptuous Kūshānshāh was decorated precisely with a lion's head. A good Zoroastrian would not forget that such a beast was the familiar of Ahriman, the Spirit of Evil.

It will be noticed, returning again to Naqsh-i Rostam, that in the lower register of the double relief there is again a fallen opponent beneath the horse of the protagonist (fig. 18). In this case, no basis is yet available for an identification. It may be noted in passing that the helmet and aventail are of complex and highly-evolved form, but the associations of this fact are not at present evident.

The third combat scene at Naqsh-i Rostam (fig. 19) presents something of an enigma, since the protagonist's triple-pointed headgear has not been recognized; yet style and subject are evidently close to the Bahrām II panels. The opponent, with "coal-scuttle" helmet, may rightly be taken for a Roman. The broken lance depicts a common episode of mediaeval warfare. The fourth equestrian panel at Naqsh-i Rostam is once again datable, since the crown of the protagonist is that of Hormizd II, A.D. 302–309. True, his eagle's head has been destroyed by weathering, but the pearl which hung from its beak is clearly visible. Professor Hinz has identified the opponent, boldly perhaps, yet plausibly, with the viceroy Pāpak known from a silverware inscription of Soviet Georgia.³⁶

Each of these four battle scenes, leaving aside their symbolical stories, plainly conveys, like that from Fīrūzābād, the total superiority of armor over missile. The principal figures indeed carry quivers, yet the message is plain that the shock of impact is everything. Unfortunately, because of the weathering we see here few circumstantial details of the armor and its construction. Yet it is worth recalling that the panel of Hormizd II was discovered only as recently as the Chicago excavations of 1938. Further excavations in the precinct of Naqsh-i Rostam may well be expected to expose fresh panels of Sasanian reliefs at the foot of the cliff, protected from the elements by their long covering of soil, and perhaps as sharply preserved as that of Hormizd II. Such finds would throw new light on the armies of Iran and of Rome, and their numerous unattested encounters. It is strange how the atmosphere of these reliefs, already in the third Christian century foreshadows the tournament and heraldry of the fourteenth, and emphasizes how much the Middle Ages had inherited from the forgotten centuries of Imperial Rome.

The next great change in warfare must be associated with the coming of the Huns to Eastern Iran and to Europe during the mid-fourth century A.D. The

³⁵ Read by V. G. Lukonin on a coin in Leningrad, according to Hinz, *Altiranische Funde*, 194,

³⁶ Hinz, *Altiranische Funde*, 206,

same author, Ammianus Marcellinus, who describes the onslaught of the Chionites upon the Iran of Shāpūhr II in A.D. 350, narrates also the arrival, a quarter of a century later, of the Huns in Europe.³⁷ There is hardly need to argue in detail that the favored weapon of these first Huns, when they fell upon the cavalry of the Goths and of the two major empires, was the cavalry bow. So important did it seem to their leaders that the symbol of rank which they carried, as more than one excavation in Europe has shown,³⁸ was a ceremonial gilded bow. On the Iranian side, the only clear representation of Hun equipment is found on the British Museum silver bowl bearing a Brahmi inscription (figs. 20–22), described and illustrated in the Oxus Treasure publication.³⁹ Two of the personages depicted here wear princely crowns resembling those found on the Kidarite coins, and therefore assignable to *ca.* A.D. 380.⁴⁰ Despite a problem of terminology arising from the fact that Kidara inherited the titulature of his Sasanian predecessors in Bactria, Kidara Kūshānshāh, the chronology leaves little doubt that by the late fourth century the Kushans as a dynasty were extinct, and that Priscus is to be believed when he describes the Kidarites as Huns.⁴¹ The representation on the silver bowl is of a hunt rather than actual battle, but the figures represented are using their heavy weapons against ferocious animals. The compound bow is evident, and the horizontal position of the archer's hand perhaps implies that the bowstring is being drawn with the thumb. The sword is straight and heavy, and despite their elaborate weapons the horsemen ride without stirrups.

Recent years have seen great advances in the understanding of textbooks dealing with Muslim techniques of archery, and these in turn have shed some light on the less well documented earlier periods. The texts studied so far have been in Arabic, and from the present point of view fairly late, of the twelfth to the fifteenth century A.D.⁴² In the main they are concerned with the practice

³⁷ XIV.3.11; XVI.9.4; XVII.5.1; XVIII.6.22; for the appearance of the Huns in Europe, see XXXI.2.1.

³⁸ N. Fettich, "La trouvaille de tombe princière hunnique à Szeged-Nagyszéksős," *Archaeologia Hungarica*, 32 (1953), 171; Gy. László, "The Significance of the Hun Golden Bow," *Acta Archaeologica Academiae Scientiarum Hungaricae*, 1 (1951), 91–106, mentions finds of such bows at Jakusowice and Pécsüszög.

³⁹ O. M. Dalton, *The Treasure of the Oxus, with other Examples of Early Oriental Metalwork*, 3rd ed. (London, 1964), 53, no. 201.

⁴⁰ M. F. C. Martin, "Coins of Kidāra and the Little Kushāns," *Journal of the Royal Asiatic Society of Bengal*, 3 (1937), No. 2, Numismatic Supplement, 23 N.f. Coin no. 49 shows a crown resembling that on the British Museum bowl, but it seems uncertain whether the Pahlavi word *pylwc*, "victorious," appearing on these coins below the fire-altar, necessarily represents the personal name of the ruler.

⁴¹ Priscus, ed. L. Dindorf, *Historici Graeci minores* (Teubner, 1870), I, 342.

⁴² Amongst the works helpful to the student of history in gaining a grasp of the technique of mediaeval Islamic archery and the progress made in its understanding during recent years are the following: N. A. Faris and R. P. Elmer, *Arab Archery, an Arabic Manuscript of about A.D. 1500* (Princeton, 1945) (an edition and translation of an Arabic work, with notes); A. Boudot-Lamotte, *Contribution à l'étude de l'archerie musulmane* (Damascus, 1968) (an edition from the Arabic work of Marḡī b. 'Alī al-Ṭarsūsī, entitled *Tabṣirat arbāb al-albāb fī kayfiyyat al-najāt fī 'l-hurūb*); and J. D. Latham and W. F. Paterson, *Saracen Archery* (London, 1970) (an edited translation of the Arabic work of Ṭaybughā al-Ashrafī al-Baklamishī al-Yūnānī, entitled *Kitāb ghunyat at-tullāb fī ma'rīfat ramy al-nushshāb*); as an introduction to the above, the article by W. F. Paterson, "The Archers of Islam," *Journal of the Economic and Social History of the Orient*, 9 (1966), 69–87, will be found most helpful. Many of the technical points emerging from these texts are likely to have application to Byzantine horse-archery also.

of horse-archers under the Ayyūbids and Mamlūks, who in turn elaborated Seljūq and Mongol methods. A feature of these textbooks which demands attention is, however, that they embody a double tradition—on the one hand, of literary theory going back to far earlier textbooks; on the other, of contemporary practice which may have differed widely from this theory in radical points that the Arabic authors seldom specify and possibly did not themselves always clearly appreciate. Some of the obscurities of these texts may well be due to the compilers' efforts to reconcile verbal formulae relating to obsolete methods and equipment with everyday practice of a totally different sort. Nevertheless, these obsolete traditions are most illuminating for the earlier periods, and the texts as a whole provide a helpful frame of reference for the present discussion.

It is well established by these sources that the cavalry bow was always of compound construction, of five wooden sections spliced together, and having sinews glued to the back of the bow, and strips of horn to reinforce its belly.⁴³ It is also evident that in the later Muslim period, the only recognized method of drawing such a bow was with the right thumb, in turn locked in place on the bowstring by the index finger. This method has certain advantages, but differs radically of course not only from Western archery but, as I shall hope to show, from the earlier Iranian tradition. In an article, W. F. Paterson (see note 42) maintains that a bow of this construction (short enough to use on horseback) could be operationally equal or superior to the large English longbow. The effective range would be about 250 yards, and at 100 yards its arrows would pierce substantial armor. Similarly, in the seventh-century *Strategicon* ascribed to Maurice Tiberius (of which there will be more to say), regulation arrow-shot can be calculated at the closely equivalent figure of 133 meters.

The question now arises whether the devastating victories of the Huns may be ascribed simply to their superior horsemanship, the result of a childhood spent in the saddle, or, rather, to their bows, which represented a major technical advance. The archery manuals make it clear that the two factors cannot really be separated. To use any bow effectively on horseback is no small feat and needs a lifetime of training. The stronger the bow, the more consummate must be the horseman. The compound bow of Mongolia, which differs in certain details from later Persian and Turkish bows, may indeed have been the most powerful weapon devised for such use. Its development may already have reached perfection by the fourth century A.D. Yet, the use of such weapons was always limited by the supply and training of suitable horsemen. Their moments of prominence in Near Eastern history were always those of population movement from Central Asia: the centuries of the Huns, the Seljūqs, and the Mongols. Against the assets of the nomad—horsemanship, hardiness, and a practiced aim—urban societies would naturally pit the industrial resources which made possible the output of mail, and even more elaborate armor. For the Hun archer our respect must be further enhanced,

⁴³ Latham and Paterson, *Saracen Archery*, p. xxvi.

since his feats with the bow, as our illustration shows, would have been achieved without the help of stirrups.

The hypothesis adopted here, that under the early Sasanians horse-archery went into decline, to revive after contact with the Huns, finds support in a tradition quoted in the manual of Mardī b. ‘Alī al-Ṭarsūsī.⁴⁴ He claims that after the time of Ardashīr and Shāpūhr I archery fell into disuse until the days of Bahrām Gūr (A.D. 421–39). Arabic writers, in fact, attributed a text-book on archery to Ardashīr I, an ascription upheld by the *Fihrist*, though we must reckon with the possibility that ascriptions of this kind were often apocryphal. The concern of Shāpūhr I for archery is certainly no legend, since it is documented by the inscription of Hajjiābād, and its recently recorded duplicate of Tang-i Burāqī.⁴⁵ The practice of archery by Bahrām Gūr is reported as early as the *Murūj* of al-Mas‘ūdī,⁴⁶ an author possessing good information on Sasanian matters. In art, the earliest representation of Sasanian archery seems to be on a silver bowl, apparently depicting Hormizd II (A.D. 302–309), in the Cleveland Museum of Art.⁴⁷ If the piece is contemporary with the ruler depicted, it will have been made before the advent of the Chionites (A.D. 350). It is relevant to inquire whether it was the coming of the latter nation which introduced innovations into the archer’s technique.

Other evidence for details of archery in the earlier Sasanian period is, however, scanty. It will be recalled that the Kidarite dish already examined raised the possibility that the Huns, like later Central Asian peoples, were accustomed to draw their compound bow with the thumb. There is support for the general hypothesis that the so-called “Mongolian draw” was used by the Huns, and from them taken up by the Byzantines, in a passage from the anonymous sixth-century chapter on archery, Περὶ τοξείας.⁴⁸ The wording of the Greek seems to imply that three different “locks” were known, and that the one

⁴⁴ Boudot-Lamotte, *Contribution à l’étude de l’archerie musulmane*, 46–47.

⁴⁵ Gerd Gropp, “Einige neuentdeckte Inschriften aus sasanidischer Zeit,” in Hinz, *Altiranische Funde*, 230, where the length of the Sasanian archery range is given as about 150 meters.

⁴⁶ Al-Mas‘ūdī, *Murūj*, II, 191 (amongst anecdotes of Bahrām Gūr): *wa mā uḥḍitha min al-ramy bil-nushshābi fī ayāmihi min al-naẓari fī dākhili ‘l-qawsi wa khārijīhi*. . . (and what is related about shooting with arrows in his time, concerning the taking of aim from inside the bow and outside it). Later technical authors make much of the phrase *al-naẓaru min dākhili ‘l-qaws* (the taking of aim from inside the bow), but their traditional explanation that the “inside” of the bow was the right and the “outside” the left (Faris and Elmer, *Arab Archery*, 52; Latham and Paterson, *Saracen Archery*, 61) seems to the layman rather artificial. Since it is emphasized (Latham and Paterson, 59) that Bahrām Gūr was shown in old paintings taking aim “from the inside of the bow,” the possibility should perhaps be entertained that originally the phrase referred to the Sasanian practice of drawing the bow with the fingers, which in turn necessitated the placing of the arrow to the left of the bow as it was drawn. This feature can indeed be distinguished in Sasanian renderings, and it is natural that it should have attracted attention. Later, when the Muslim practice of drawing with the thumb (cf. Latham and Paterson, *op. cit.*, p. xxv) had completely ousted the older method, and the arrow was always placed on the right, it is possible that older discussions came to be misunderstood, and the term *naẓar* applied in a more specialized technical sense.

⁴⁷ Dorothy G. Shepherd, “Sasanian Art in Cleveland,” *Bulletin of the Cleveland Museum of Art*, 51,4 (1964), 73.

⁴⁸ O. Schissel von Fleschenberg, “Spätantike Anleitung zum Bogenschiessen,” *Wiener Studien*, 59 (1941), 118f.: Τῶν δὲ τοξευόντων οἱ μὲν τρισὶ τοῖς μέσοις δακτύλοις τὴν νευρὰν ἔλκουσιν, οἱ δὲ δυσὶ, καὶ τούτοις οἱ μὲν τοῦ μεγίστου ἐπικειμένου τῷ λιχανῷ, οἱ δὲ τοῦναντίον, οἱ καὶ μᾶλλον τὴν νευρὰν ἔλκουσι καὶ πέμπουσιν τὸ βέλος σφοδρότερον.

using the thumb was regarded as the most powerful. An archer's thumb-ring from Fustāt,⁴⁹ of which the decoration is apparently early, lends substance to the contention of the Arabic manuals that the archers of early Islam, no less than the later Mamlūks, were accustomed to draw the bowstring with the thumb. They are likely to have learned the technique from the Byzantine army, who in turn had it from the Huns in the days of Belisarius. It will, thus, have been the Arab armies who introduced into Iran an innovation which the Iranians had apparently long refused to adopt from their Central Asian neighbors.

The well-known Sasanian dish in the Metropolitan Museum (fig. 23), representing in all probability Khosrau I Anoshirvān (A.D. 531–79), shows that even after two centuries of contact with the Chionites and Hephthalites, the Sasanians were employing a very different method of locking the right hand on the bowstring. That this was a well-known fact is suggested by a statement in the *Strategicon*,⁵⁰ that it was possible to shoot either *πέρσιστι* or *ῥωμάϊστι*, in Persian or in Roman style. On the plate the string is gripped with the three lower fingers of the right hand, but the index finger points toward the target. This rather unusual method appears on all the Sasanian silverware known to the present author. It is difficult to believe that this was indeed a practical manner of drawing the compound bow, but that it was is confirmed by the archery manual translated by Faris and Elmer,⁵¹ which ascribes to the Slavs "a peculiar draw which consists of locking the little finger, the ring finger and the middle finger on the string, holding the index finger outstretched along the arrow, and completely ignoring the thumb." The author goes on to explain that "finger-tips" of gold, copper, and iron are used by archers who employ this method. On what authority the author ascribed such a technique to the Slavs, and to them alone, is by no means clear. Yet it must be significant that it is just this method which is illustrated on all the Sasanian dishes. Dr. Ghirshman has studied a silver plate in Tehran upon which an unidentified horseman shoots while seated backward in the saddle,⁵² and where a chain is shown at the back of the archer's right hand, passing round the wrist, crossing on the back of the hand, with its two free ends running to the two middle fingers. This is most easily explained as a safety chain, to prevent such finger-tips or rings as I have mentioned from falling and being lost in the heat of battle or the hunt.

It is evident that if the Sasanian archer wore rings upon his fingers, it was with these that he was accustomed to draw the bow; unlike the Mogul archer

⁴⁹ W. F. Paterson, "The Fustat Ring," *Journal of the Society of Archer-Antiquaries*, 10 (1967), 40.

⁵⁰ Maurice Tiberius, *Strategicon*, in *Arriani Tactica et Mauricii Ars Militaris*, ed. and trans. J. Scheffer (Uppsala, 1664), p. 18, chap. I. For a discussion of the evidence for the Sasanian method, see W. F. Paterson, "The Sassanids," *Journal of the Society of Archer-Antiquaries*, 12 (1969), 29–32, whose views are largely followed here.

⁵¹ *Arab Archery*, 43.

⁵² R. Ghirshman, "Notes Iraniennes, VI. Une coupe sassanide à scène de chasse," *Artibus Asiae*, 18 (1955), 15. A clearer illustration of the detail will be found in the same author's *Iran. Parthians and Sasanians*, 210, fig. 250. It is interesting that the famous Hermitage plate (J. I. Smirnov, *Vostochnoe serebro* [St. Petersburg, 1909], pl. xxiii), shown to be of Islamic date by the presence of stirrups, unmistakably illustrates the bowstring drawn with the thumb, and the arrow on the right-hand side of the bow.

in India, whose thumb required protection, and for whose use many thumb-rings were made. It is to be hoped that future archaeological finds from Iran, either with representations of hunting scenes, or of the finger-rings themselves, will prove informative on this question. Furthermore, the actual archery manuals in Persian, which seem to lie behind the Arabic texts and which are likely to give a closer view of the Sasanian tradition, have still to be studied.⁵³

Whichever of the factors discussed is to be regarded as decisive—the construction of the bow, the manner of drawing the string, or the level of training demanded—the reader of Procopius is left in little doubt that during the sixth century A.D. the arrow had again asserted its precedence over the lance as the principal weapon of the cavalry. This much is stressed in that author's opening chapter. He insists that the bowmen of his day are heavily armored, expert horsemen, who can shoot to either side, to right or left, and whose missile travels with such force as to pierce both shield and breastplate.⁵⁴ In the context of the *Gothic War* he observes that almost all the "Romans," together with their allies the Huns, are horse-archers; but that the Goths have no experience of this form of fighting, since their cavalry employ only spear and sword. Here then was one factor in the revival of Byzantine military power under Justinian. Not only were the Huns recruited for the army as mercenaries; citizens of the Empire too were being trained in these complex skills. There may also have been a deliberate decision to introduce a stronger bow for the Byzantine cavalry. Procopius comments,⁵⁵ of a battle at Callinicum, that the archery of the Persians was more rapid, but that of the Romans more lethal, since their bows were more tightly strung. That this is a realistic observation is confirmed by Paterson, an exceptionally well-informed commentator, who remarks, in a different context:⁵⁶ "The real advantage of a heavier bow is that it enables a heavier arrow to be used, that will hit harder, and achieve a higher penetration." Often in the history of mediaeval warfare ingenuity has been devoted to the simple question of whether the missiles of one party were capable of piercing the armor of their opponents.

Amazement has already been expressed that both the battles of the Sasanian cavalry and the devastating horse-archery of the Huns were undertaken without the benefit of stirrups. The earliest notices and evidence of this device seem to come from the boundaries of China as late as the fifth century A.D.⁵⁷ At the site of Toung K'ou in North Korea, which has previously been mentioned (p. 274), the tomb known as Buyō-Zuka has fine frescoes of horse-archers riding with stirrups (fig. 24).⁵⁸ The rendering of the compound bow is especially clear, with its rigid grip, resilient limb, and lever-like extremities. A further panel shows mounted archers at the hunt. With regard to the date of this

⁵³ E.g., for the later tradition in Persian, Muḥammad Budha'ī, *Hidayat al-rāmī* (composed in Bengal), C. Rieu, *Cat. of Persian MSS in the British Museum*, II, 488; H. Ethé, *Cat. of Persian MSS in the India Office*, I (London, 1903), 1496. Also Sayyid Amin al-dīn, *Kulliyat al-ramy*, Ethé, I, 1497.

⁵⁴ Procopius, I.1.12.

⁵⁵ I. xviii.32.

⁵⁶ Paterson, "The Archers of Islam," 84.

⁵⁷ A. D. H. Bivar, "The Stirrup and its Origins," *Oriental Art*, 1, 2 (1955), 4.

⁵⁸ Ikéuchi, *Toung K'ou*, II, pls. x, xiii.

group of frescoes there is room for discussion, but they differ greatly from those of the Sanshitsu-Zuka, also mentioned above, and are hardly to be placed earlier, nor indeed much later, than the early sixth century. To the early seventh may be ascribed certain elegant stirrups cast in bronze, from North China. There is a specimen at the Ashmolean Museum in Oxford: (fig. 25) and three more are in the Chicago Museum of Natural History.⁵⁹ A miniature pair are exhibited at the British Museum. The characteristic features are the delicately curved bow and the curious rectangular extension at its top, of which the precise function remains to be explained. Such stirrups are used during the cavalry campaigns of the early T'ang dynasty, as is shown by their appearance on one of the most famous series of Chinese sculptures, the reliefs commemorating the six war horses of the Emperor T'ai Tsung, made in A.D. 623 (fig. 27).

The intention of that Emperor, in the campaigns so commemorated, was to tame (partially at least) the kingdom of the so-called "Blue Turks," which then flourished in Mongolia. Half a century earlier, during the closing years of Justinian, these same Turks had driven out the previously dominant confederacy, known to the Chinese as the Juan-Juan. The track of the exiles westward across Siberia is marked by finds of stirrups derived from the Chinese prototypes.⁶⁰ By A.D. 560 they were in diplomatic relations with Justinian, and seven years later had settled in their final home, in modern Hungary between the Danube and the Theiss. The typological similarity between the iron stirrups which have been excavated in numbers from their Hungarian graveyards (fig. 26) and those of the T'ang provides an adequate rejoinder to historians who may still doubt that powerful tribes such as the Huns and Avars were emigrants to Europe from the Chinese sphere. Curiously, the Avars during this long migration seem to have been insulated from the Sasanian empire by the intervening kingdom of the Hephthalite Huns. In the West, Byzantine armies soon learned to their cost that the Avars were the masters of their day in cavalry warfare, and began to remodel their own units on the Avar pattern. This fact is emphasized by the text which has next to be discussed and which throws much light on the details of Avar equipment.

There is a certain agreement amongst historians of the Byzantine period that the most important and informative of their sources on tactics is the text known as the *Strategicon* of Maurice Tiberius. In 1905 the commentator on this work, F. Aussaresses,⁶¹ was content to accept the attribution to the Byzantine emperor of that name. On the other hand in 1935 the Hungarian E. Darkó made an ingenious case that the final form of the tract had been written by the Emperor Heraclius, on the eve of his campaign against the

⁵⁹ M. I. Rostovtzeff, *The Animal Style in South Russia and China* (Princeton, 1929), 79 and 107, pl. xxiii.4.

⁶⁰ S. V. Kiselev, *Drevnjaja istorija južnoj Sibiri* (Moscow, 1951), 578; I. A. Lunegov, "Redikarskij mogil'nik," *Kratkie Soobsčeniya*, 57 (1955), 124-28; L. R. Kyzlasov, "Novaja datirovka pamjatnikov Jenisejskoj pis'mennosti," *Sovetskaja Arxeologija*, 3 (1960), 99.

⁶¹ F. Aussaresses, "L'auteur du *Strategicon*," *Revue des études anciennes*, 8 (1906), 23-39; *idem*, *L'armée byzantine à la fin du VI^e siècle d'après le 'Strategicon' de l'empereur Maurice* (Paris, 1909), 5.

Sasanian Empire.⁶² It cannot be doubted that the text is highly authoritative and of major interest, and word that a new edition has now been published is most welcome, though it appeared too late for me to consult it in connection with this paper.⁶³ The only previous edition had been that of J. Scheffer, issued in 1664 as an appendix to the *Tactica* of Arrian.⁶⁴ The archaic print is tedious today, and the edition had become a major rarity, so that an up-to-date translation and commentary were a real desideratum. It is on the edition of Scheffer that the following observations are based.

The inventory of weapons specified by the *Strategicon* for a cavalryman is an impressive one, and forms a useful pendant to that given by Ṭabarī for the troops of Khosrau I (p. 276, *supra*). In the Appendix, the two lists have been tabulated for comparison, and a third added giving equivalents in Persian, as they appear in the recently published Tehran edition of Bal'amī's early Persian rendering of the Ṭabarī passage (ed. Muḥammad Parvīn Ḡunābādī [Tehran, 1341]). There is, indeed, a curious hint of source-relationship between the first two texts, in Greek and Arabic respectively, which suggests that there may lie behind both some official document which had become known to the two sides, but of which the exact explanation is at present far from obvious. In connection with this list, it will be noted that there are some exotic terms in the *Strategicon* which offer philological problems. The etymology of *zaba*, an unspecified variety of armor, is rather obscure, though the term is said to survive in modern Albanian and Rumanian. Probably it signifies mail, rather than the solid breastplate. In the printed text a spelling *sabla* appears,^{64a} which the editor regards as referring to the same item. It would be tempting to link this term with the saber, apparently another innovation of the Avars, but in the absence of a critical edition the reading remains uncertain. Another curiosity is the *marzobaboulon*, translated by Aussaresses as "mace," and so rendered in the Appendix. However, Vegetius has the Latin form *martio-barbulus*, apparently a weighted javelin specially favored by the legions in Illyricum.⁶⁵ An object in the museum at Wiesbaden is claimed as a specimen of such a weapon,⁶⁶ but there is no certainty that the weapon intended by the *Strategicon* was of the same form, since in military manuals a term may be transferred from an obsolete weapon to its successor.

Of special interest in the *Strategicon* are the descriptions of cavalry formations. The battle array of armored cavalry during the fourth and fifth centuries A.D. understandably resembled the infantry phalanx of classical Greece. Right wing, left wing, and center formed separate groups, but the force as a whole was drawn up as a single line, up to eight deep. We learn from the *Strategicon* that there was no provision for a reserve, nor would this have been

⁶² E. Darkó, "Die militärischen Reformen des Kaisers Herakleios," *Bulletin de l'Institut Archéologique Bulgare* (= *Actes du VI^e Congrès intern. des études byz.*), 9 (1935), 110-16.

⁶³ Mauricius, *Arta militaria*, ed. and trans. H. Mihăescu (Bucharest, 1970).

⁶⁴ *Supra*, note 50.

^{64a} Maurice Tiberius, ed. Scheffer, p. 20.

⁶⁵ *Epitoma rei militaris*, I.17.

⁶⁶ A. Baumeister, *Denkmäler des klassischen Altertums zur Erläuterung des Lebens der Griechen und Römer in Religion, Kunst und Sitte*, III (Munich-Leipzig, 1888), 2077, fig. 2314.

useful. The whole issue of the battle, once an opening appeared, depended on the single overwhelming cavalry charge. For this, the available forces had naturally to be concentrated. In the crisis, to hold back a reserve would weaken the striking force; should the charge fail, a reserve could only be destroyed in detail in its turn.

Such ponderous tactics, our author emphasizes, were dangerous for an army faced by the arrows and flexible maneuvers used by the Huns and Avars. Horse-archers might repel the charge of the *clibanarii*, and if they did not they could inflict casualties and wear down their opponents whilst continuing to retreat. Detachments working in from the flank would spring ambushes and pick off the stragglers when the charge began to lose cohesion. The repeated disasters which befell the Sasanian Fīrūz in campaigns against the Hephthalites conformed to this pattern, and are related in the text in detail.

The formation proposed was specially designed to avoid these dangers, and resembles a horsed version of the Roman maniples.⁶⁷ The basis was a double instead of a single line, the interval being some 400 meters. The second line, a third of the total strength, could provide all-round defense by executing an about-turn. As a reserve, they were ready to deal with emergencies, and were similarly arranged in three groups with the center divided, presenting intervals through which, maniples-fashion, the front line might withdraw if rebuffed. Between the two lines was the station of the command group, with the general's bodyguard, the elite *bucellarii* or retainers. It is interesting, in the possible context of Heraclius' Persian wars, to learn that the adjutants were required to speak not only Greek and Latin, but also Persian.

The front line, composed of two-thirds of the available force, was divided, as we have seen, into three groups. The center was drawn up eight deep, but the wings four deep. For the front-line troops there were two alternative tactical roles, those of *cursores* and *defensores*. The task of the former was to advance in open order, and inflict as much damage as possible with their arrows. If charged by superior numbers they were to retire. The success gained by the lancers of the First Crusade before Antioch shows that horse-archers could be placed in jeopardy if caught at close quarters by a mass of heavy cavalry, and the *Strategicon* is conscious of this danger. The *defensores* had the task of protecting their archers against any such contingency by following up the advance of the *cursores* in close order and providing support with their lances if the archers should be pressed. Troops on the wings would normally act as *cursores*, and those of the center as *defensores*, but the details of their operations need careful examination. In principle, no difference of training or armament is laid down for the various components, though it can be gathered that the elite groups, the *bucellarii*, *foederati*, and *optimates* would have been more fully armed. Ideally, one would suppose, all would have been trained and armed to act either as *cursores* or *defensores*, as, to judge by the handbooks of *Furūsiyya*, was the practice of the Ayyūbids and Mamlūks. However, when resources were strained, as was no doubt the case in late Byzantine times, an

⁶⁷ Aussaresses, *L'armée byzantine*, 75.

economy could have been effected by separating the two roles. Foreign auxiliaries such as the Huns and Avars would have been effective as *cursores*, even if they lacked full armor. The main problem for the Byzantine regulars, as the text makes clear, was to find efficient archers. Often only two or three in a file of eight were dependable shots, and the author comments reassuringly that young soldiers who were not capable of managing the bow would do best to rely on a light javelin!

Another basic point appears repeatedly in all the manuals of warfare. The horse-archer, for all his agility, was at a disadvantage engaging an enemy, especially a lancer, who was approaching from his right. There was thus an effort continually to outflank the enemy on the right wing, and to initiate attacks on the right flank. Extra detachments were to be posted on the left wing in a defensive role, to neutralize this type of movement.

It is striking how many features of mediaeval warfare, both as conducted by European chivalry or by the Mamlūk Sultanate—the tactics, weapons, the elaborate armor, and even the heraldry which the latter necessitated—were early established in the wars of East Rome against the Sasanians. Subsequent developments seem to have been more a matter of degree, or of level of training, than innovations of principle. The final evolution of the Sasanian *clibanarius* (figs. 28, 30) is well represented by the figure of Khosrau II (A.D. 591–628) at Tāq-i Bustān, near Kirmānshāh, in Persia. He wears an enclosed helmet, from which hangs an aventail of mail, and his shirt of mail surely conceals a breastplate. It is striking that even in this eleventh hour of the Sasanian monarchy, the King seems to be riding without the use of stirrups. True, feet and legs are damaged on the relief, so that there is room for discussion. Yet, it seems probable that for this innovation, no less than for the thumb-lock used by the horse-archer, Iran had to await the coming of Islam. It is true that the hypothesis that stirrups were used by the Umayyad armies of the Arab expansion has been questioned.⁶⁸ But its probability seems to be confirmed by their appearance in the hunting scene at Qaṣr al-Ḥayr al-Gharbī (fig. 29), where the buildings are attributed to the Caliph Hishām (105/724 to 125/743).⁶⁹ Since it is clear that it was not from the Sasanian armies that the Arabs learned the use of stirrups, the conclusion must be that it was from the Byzantine armies of Heraclius, who in turn learned it through their contact with the Avars.

Throughout the period which has been studied here, the main sources of innovation in cavalry warfare were the nomad empires evolving in Central Asia. With these, both Byzantium and Iran had separate, and often punishing, encounters. Unexpectedly perhaps, Byzantium seemed the more eager to

⁶⁸ L. White, Jr., *Medieval Technology and Social Change* (Oxford, 1962), 18–19.

⁶⁹ D. Schlumberger, "Deux fresques omeyyades," *Syria*, 25 (1946–48), pl. B facing p. 96. For the date, *idem*, "Les fouilles de Qaṣr el-Heir el-Gharbi (1936–38)," *Syria*, 20 (1939), 334, who relies on the inscription of 110/728–9. On this evidence, the sources quoted by Professor L. White, *loc. cit.*, for the introduction of the stirrup in Islamic armies in the time of al-Muhallab, 74/693, could be reliable. Yet, in the historical context, it is hardly plausible to construe the text he quotes as implying that the innovation was due to the Azraqī rebels.

imitate the new methods of warfare; perhaps even, by the exercise of purely intellectual effort, to analyze and improve them. Understandably, the Iranian response took a different form. Their own traditions, both in horsemanship and in archery, were long established and famous. Whatever improvements were made were confined to more intensive training and organization along their own established lines. Thus, the military regeneration achieved by Anoshirvān appears to have been more thorough and complete than that attempted by Justinian and his general Belisarius. Yet, its ability to assimilate technical innovations, and its consequent long-term potential were somewhat limited. It is a historical commonplace, applicable also in the case of the Mamlūk Sultanate, that the cavalry officer tends to err on the side of traditionalism. Conditioned to regard excellence as the perfection of the personal skills in which he has been trained, he may be slow to grasp an innovation which undermines their relevance.

APPENDIX

GLOSSARY OF TECHNICAL TERMS FOR CAVALRY EQUIPMENT

	<i>Strategicon</i> Greek	Ṭabari Arabic	Bal'ami Persian
1. Mail	λάβα	<i>dir'</i>	<i>zirih</i>
2. Breastplate	λωρίκιον	<i>jawshan</i> (P)	<i>jawshan</i>
3. Gorget	περιτραχήλια		[* <i>grīvḡpān</i>]
4. Aventail	σκάπλιον		
5. Helmet	κάσσις	<i>mighfar</i>	<i>khawd</i>
6. Buckler	σκουτάριον	<i>turs</i>	<i>siḡar</i>
7. Leg-guards (arm-guards)	γονυκλάρια (περικνήμιδες)	<i>sāqayn</i>	<i>sā'idayn</i>
8. Horse-armor	προμετώπιον στηθιστήριον	<i>tajāḡiḡ</i>	<i>bargustuwān</i>
9. Stirrup	σκάλοι		<i>rakīb</i> (A)
10. Lance	κοντάριον	<i>rumḡ</i>	<i>nīza</i>
11. Sword	σπαθίον	<i>sayf</i>	<i>shamshīr</i>
12. Mace	μαρζοβάβουλα	<i>jurz</i> (P!)	<i>'amūd</i> (A!)
13. Battle-axe		<i>ṭabarzīn</i> (P)	<i>ṭabarzīn</i>
14. Quiver	κούκουρον	<i>ja'ba</i>	<i>tīrdān</i>
15. Bow-case	θηκάριον		<i>kamāndān</i>
16. Bow	τοξάριον	<i>qaws</i>	<i>kamān</i>
17. Bowstring		<i>watar</i>	<i>zih</i>

Note on the Glossary: The term **grīvḡpān*, "neck-guard," of which the existence can be inferred in Parthian and Middle Persian, does not occur in Bal'ami, but is included in the list for convenience of reference. Where the *Strategicon* and Ṭabari specify leg-guards, Bal'ami details arm-guards, from which it may be assumed that an underlying source included both items. In the Arabic column, terms marked (P) are Persian loanwords. In the Persian column, the words marked (A) are Arabic loanwords. The Arabic *dir'*, "coat of mail," is probably an old borrowing from Persian, cognate with *zirih*, but assimilated to an accidentally similar Arabic root. The mention of stirrups in Bal'ami is apparently an interpolation. The normal Arabic for stirrup is *rikāb* (which does not appear in Ṭabari), but the form *rakīb* is used in early Persian texts.

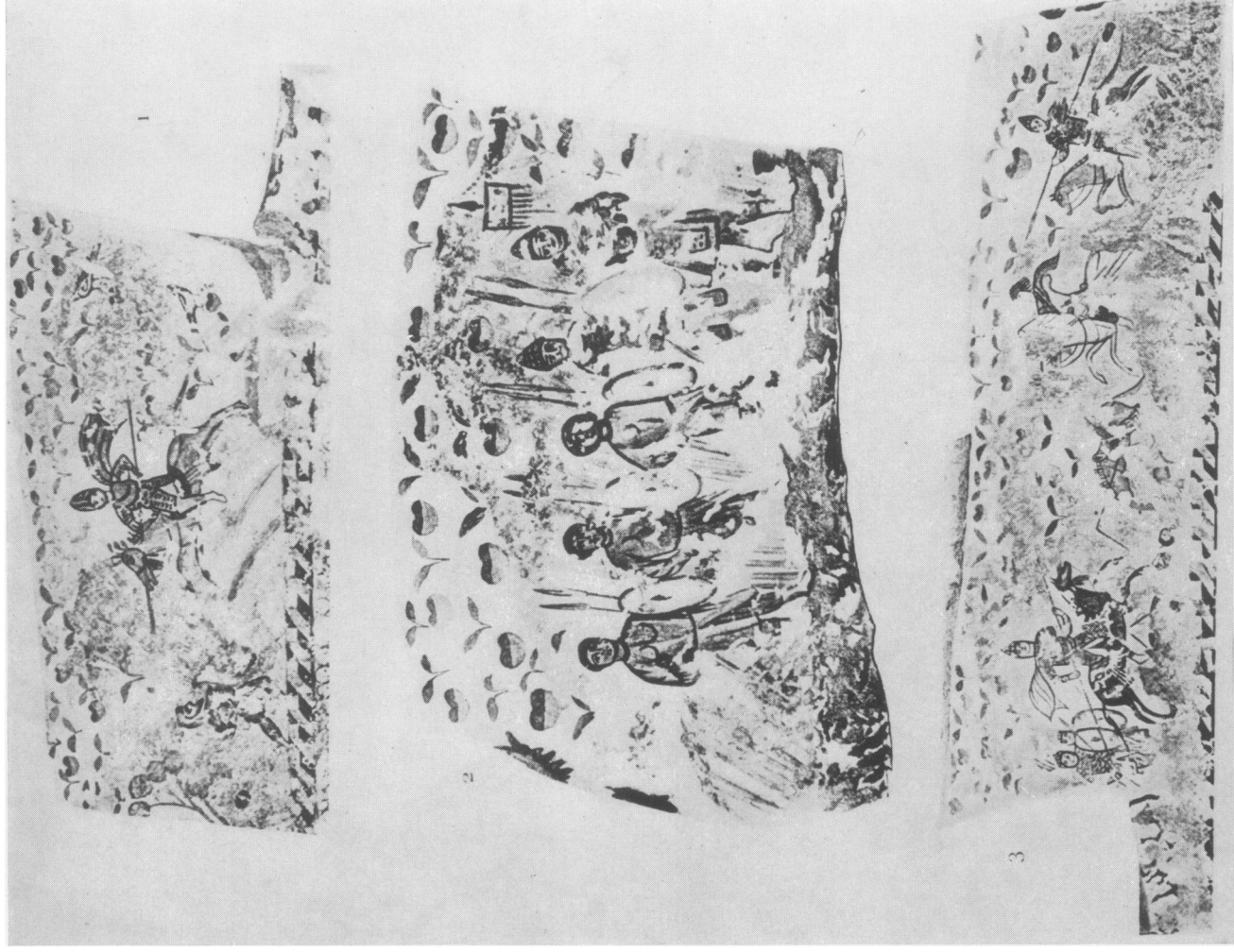


a. Obverse, Armored Horseman

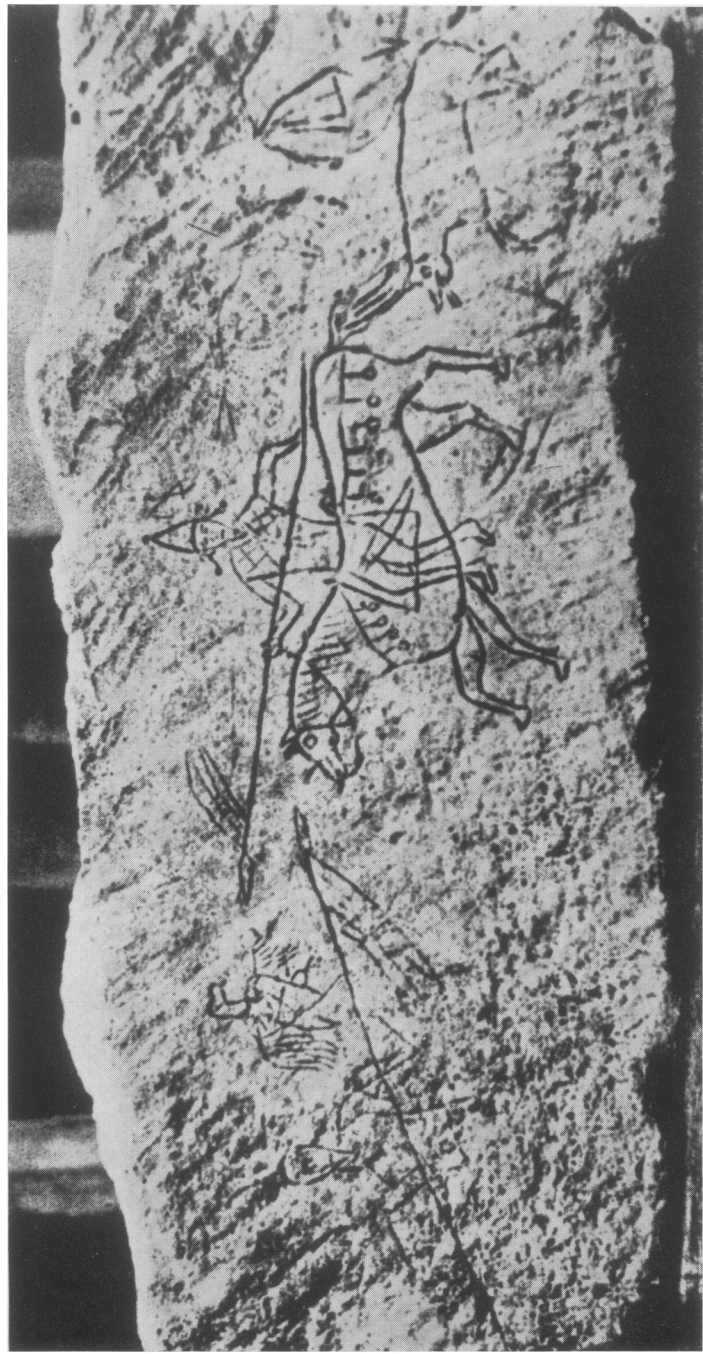


b. Reverse

1. British Museum.
Tetradrachm of the Indo-Scythian
Ruler Spalirises (ca. 80 B.C.).



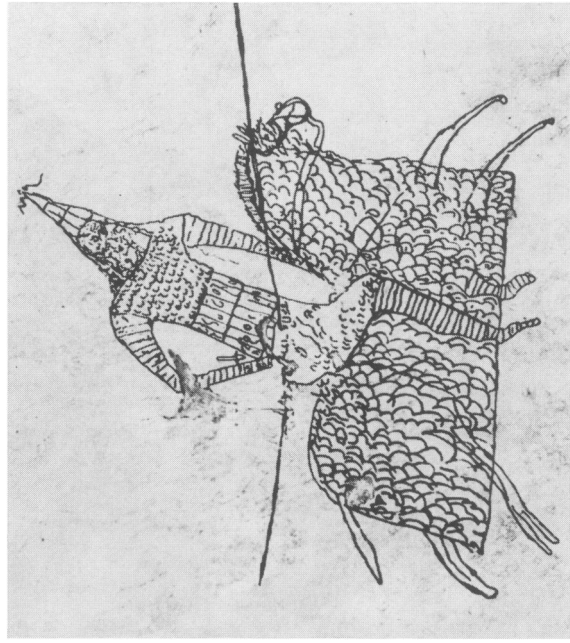
2. Crimea, Kertch, Tomb Paintings, Armored Horsemen in Action



3. Bulgaria, Preslav. Petroglyph, Armored Horseman in Combat (Date uncertain)



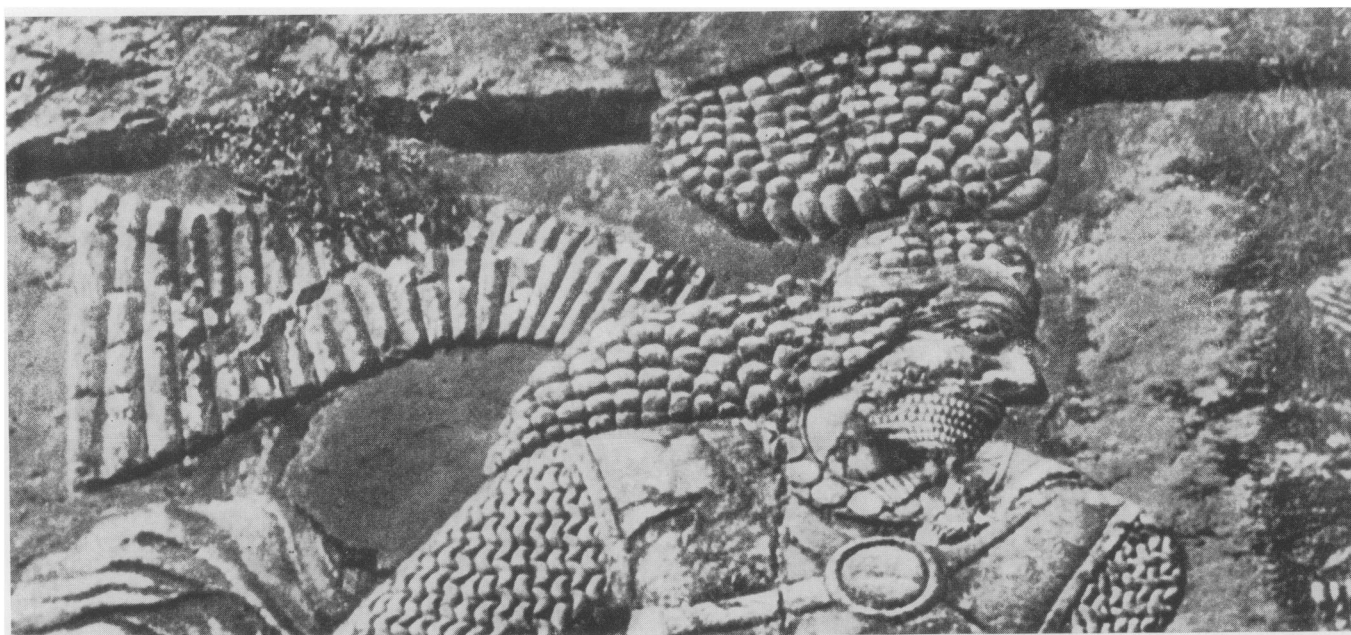
4. Korea, Tong K'ou. Tomb of Sanshitsu-Zuka, Wallpainting,
Combat of Armored Horsemen



5. Dura-Europos. Armored Horseman wearing
Splinted Breastplate (*jawshean*) and using Horse-armor

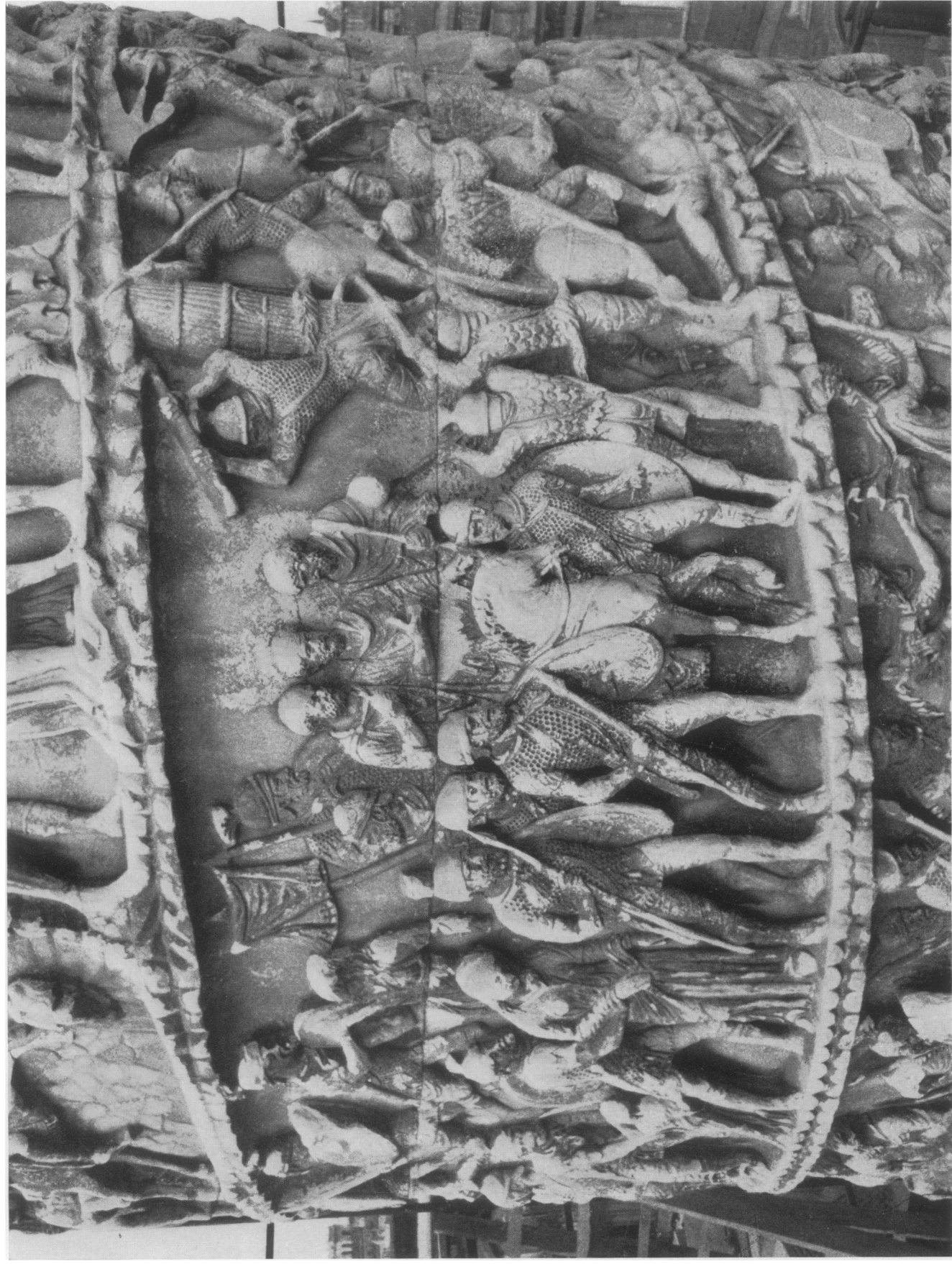


6. Combat of Ardashīr I and Ardavān V



7. Detail of Figure 6 showing Mail and Breastplate of Ardashīr I

South Persia, Fīrūzābād



8. Rome, Column of Marcus Aurelius, detail of Soldiers wearing Mail



9. Museo Nazionale Romano, Ludovisi Battle Sarcophagus, detail of Standardbearer wearing Mail



10. Firūzābād. The Crown Prince Shāpūr in Battle



11. Naqsh-i Rustam. Equestrian Relief of Bahrām II, in Two Registers



12. Vatican. "Sarcophagus of Helena," detail of Roman Horsemen



13. Detail of Fallen Victim in Upper Register of Figure 11



14. Detail of Protagonist in Lower Register of Figure 11

Naqsh-i Rostam. Equestrian Relief of Bahrām II



a. Obverse

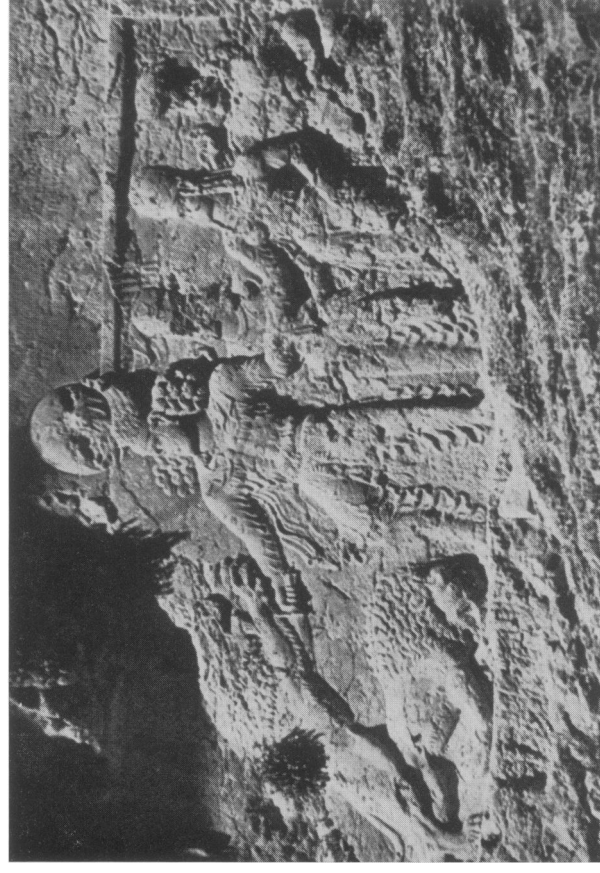


b. Reverse

16. Delhi, National Museum. Drachma of Hormizd Kūshānshāh (ca. A.D. 280), Harāt Mint



15. Naqsh-e Rostam. Equestrian Relief of Bahrām II, detail of Opponent in Lower Register of Figure 11



17. South Persia, Sar Mashhad. Allegorical Lion-hunt of Bahrām II



18. Equestrian Relief of Bahrām II, detail of Fallen Victim in Lower Register of Figure 11



19. Equestrian Relief of Unknown Personage. Note Roman Opponent wearing Angular Visor Naqsh-i Rostam



20. Detail. Note Characteristic Crown of Mounted Personage



21. Detail showing Horse-archer at the Draw
British Museum. Kidarite Silver Bowl



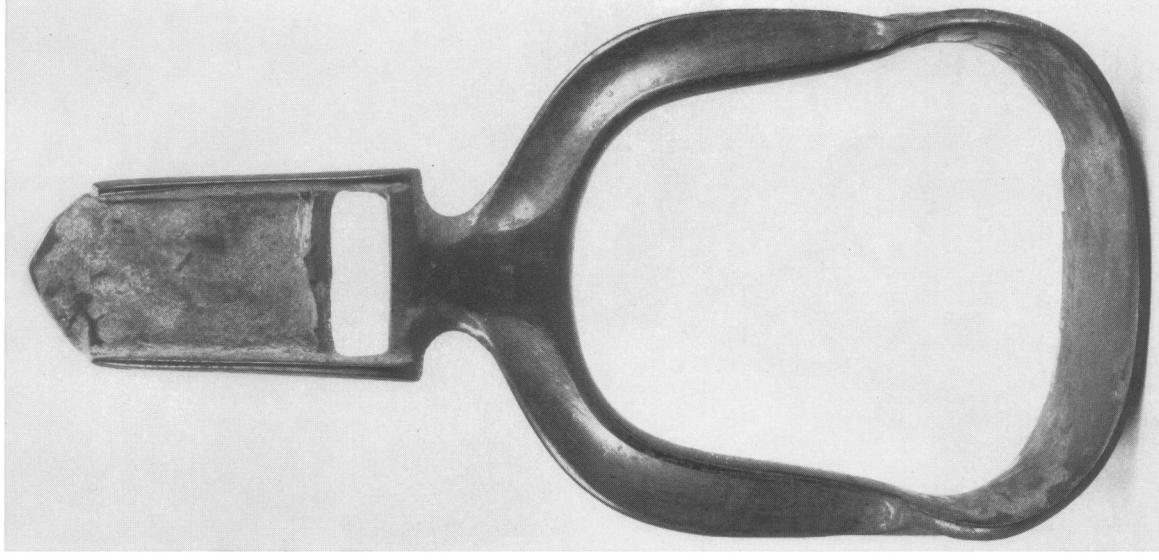
22. British Museum. Kidarite Silver Bowl, detail showing Horse-archer at the Draw and wearing Straight Sword



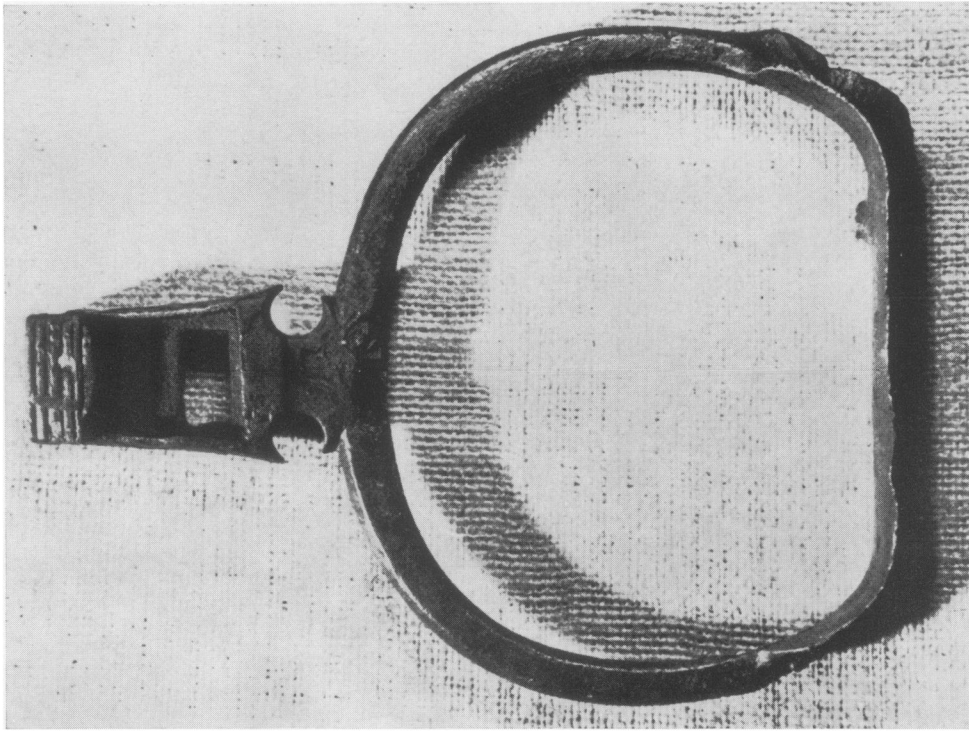
23. Metropolitan Museum of Art. Silver Bowl, Khosrau I at the Hunt



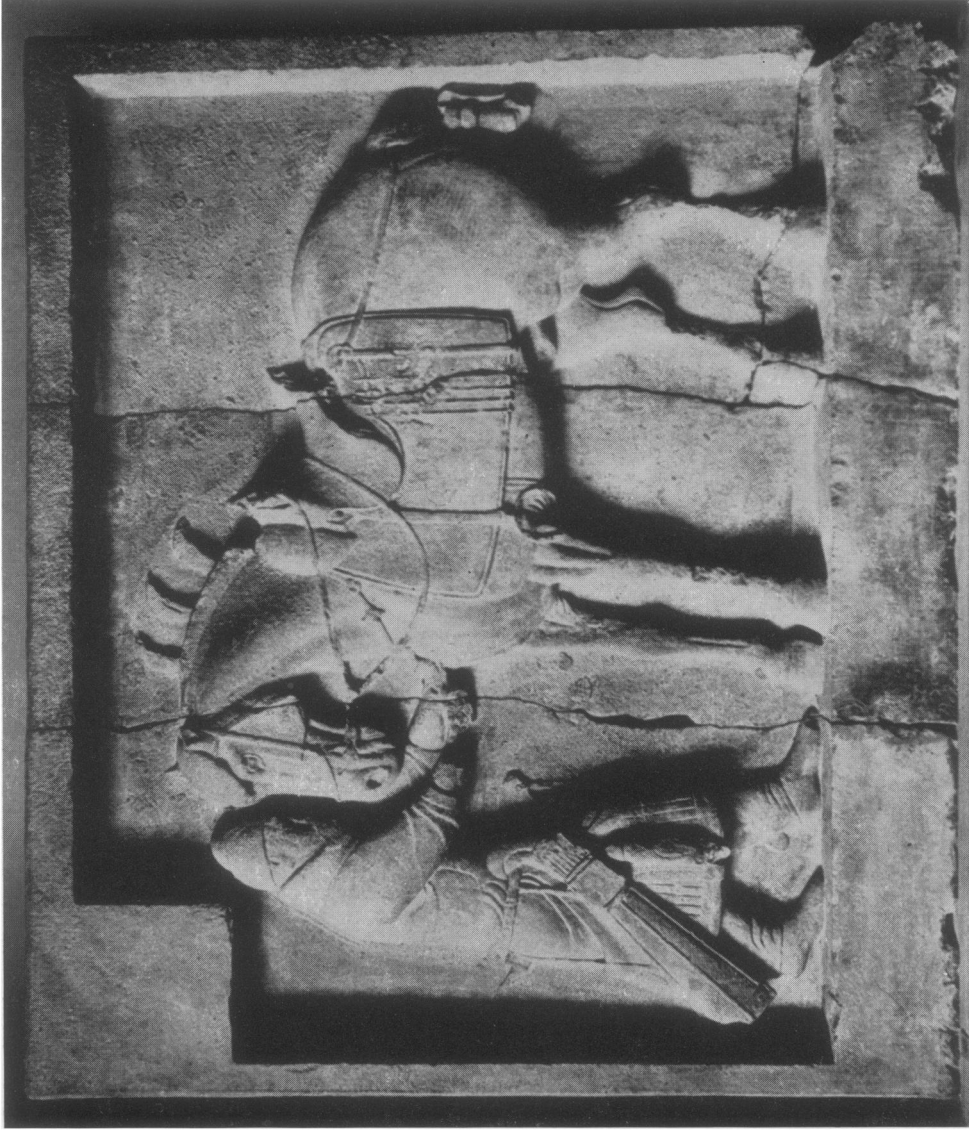
24. Korea, Toung K'ou. Fresco from Tomb of Buyō-Zuka,
detail showing Horse-archer of Wei Period



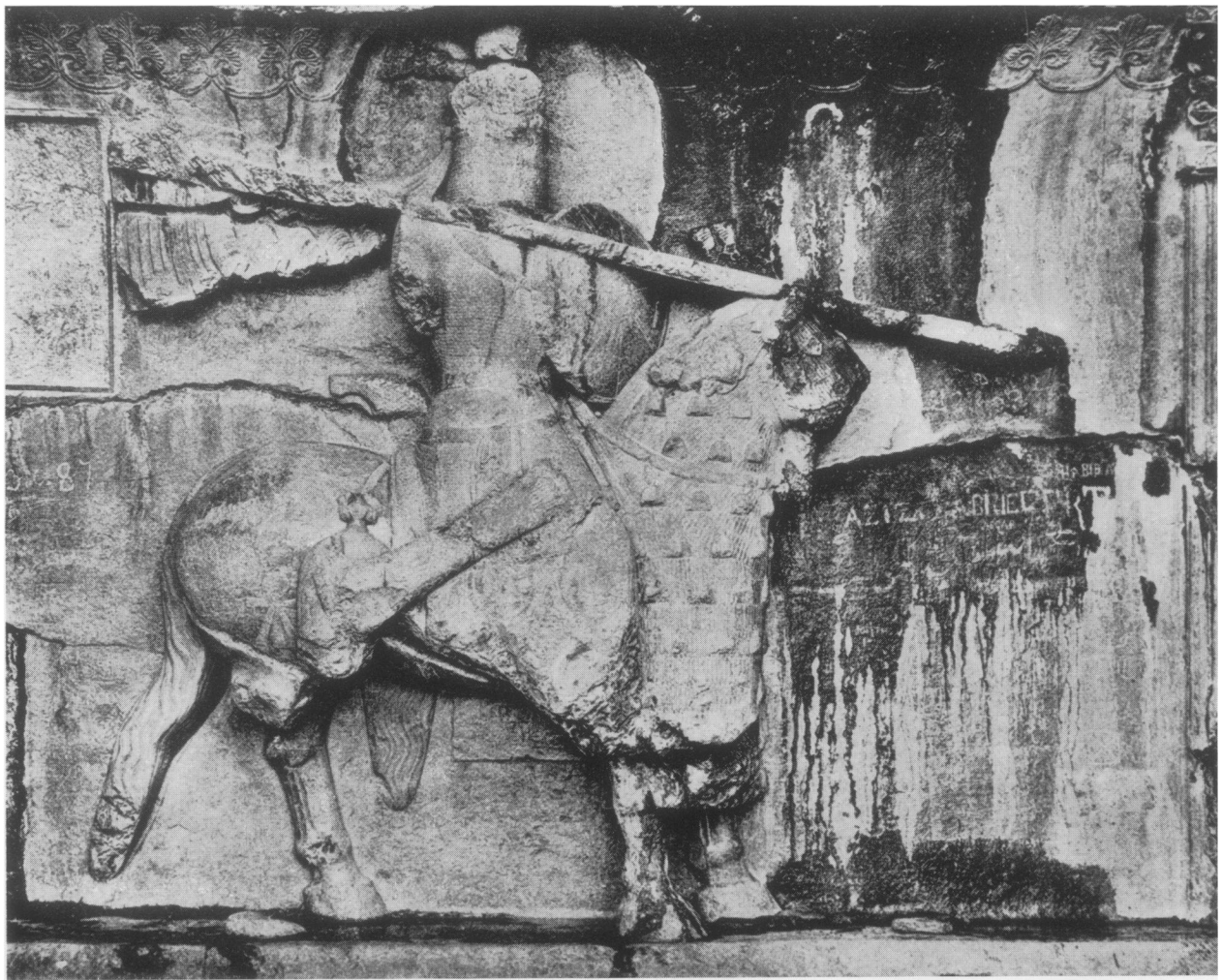
25. Oxford, Ashmolean Museum.
Stirrup, Chinese, T'ang Dynasty



26. Hungary, Csengöd. Iron Stirrup,
Avar Period, Sixth Century A.D. or Later



27. Philadelphia, University Museum. Relief commemorating the War Horses
of the Chinese Emperor, T'ai Tsung, Erected A.D. 623



28. Persia, Tāq-i Bustān. Equestrian Relief of Khosrau II. View showing Dynastic Brand on Horse



29. Qaṣr al-Ḥayr al-Gharbī. Fresco of Amīr riding with Stirrups at the Hunt



30. Persia, Tāq-i Bustān. Equestrian Relief of Khosrau II. View showing details of Helmet and Lamellar Horse-armor